Special Papers

Administering Contingent Valuation Surveys in Developing Countries

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Introduction

Ten years ago only a handful of very rudimentary contingent valuation studies had been conducted in developing countries; at the time the conventional wisdom was that it simply could not be done. The problems associated with posing hypothetical questions to low-income, perhaps illiterate respondents were assumed to be so overwhelming that one should not even try. Today we have come full circles; it is now assumed by many environmental and resource economists working in developing countries that CV surveys are straightforward and easy to do.

Because the contingent valuation business in the United States has been such an academic war zone for the past few years, many people are unaware of what a flourishing business contingent valuation studies are becoming in other parts of the world. Bilateral donor agencies and the international development backs are increasing putting contingent valuation techniques to use in project and policy appraisal as put of their everyday operations work. Just to illustrate the point, a single Latin American department in the World Bank has now funded a sufficient number of CV studies that its management is considering organizing an in-house conference on its experience using the results of CV studies, the performance of different contractors, and ways of reducing the costs of future CV work. Moreover, in light of the controversy over the use of CVM in the United States, most
future applications of the CVM are likely to be in developing countries.

In this paper I discuss some of the issues that have arisen and some of the lessons learned over the last ten years about administering CV surveys in developing countries. The discussion is organized around five distinct issues: (1) ethical problems in conducting contingent valuation surveys; (2) explaining what a contingent valuation study is all about; (3) interpreting responses to contingent valuation questions; (4) setting referendum prices; and (5) constructing joint public-private CV scenarios. This list is not meant to be exhaustive, but it will hopefully provide the reader with insights into some of the issues involving in conducting CV surveys in developing countries.

1. Ethical problems in conducting contingent valuation surveys

At the 1994 Annual Meetings of the American Economics Association, during a panel discussion about the findings of the United States National Oceanic and Atmospheric Administration's Expert Panel Report on the Contingent Valuation Method, Prof. Kenneth Arrow remarked that the contingent valuation method is fine, except when it is not. Most economists will interpret Prof. Arrow's aside to mean that contingent valuation (CV) studies are fine when the results are accurate and reliable, and clearly not so good when this is not the case. Of course, knowing when CV results are accurate reflections of individuals' preferences is not easy, and the CV literature is now full of various tests for internal and external consistency that have been proposed and are being used to help CV researchers assess the quality of their results.

Absent from most of the current debate about the "goodness" of CV results has been a careful consideration of several ethical issues that arise in the implementation of the contingent valuation method as it is currently practiced in many developing countries. In this section of the paper I discuss some of the ethical problems with much of current CV research practices (including my own work), and argue that "good" CV research demands more than simply obtaining accurate and reliable results: it also requires that CV researchers conform to accepted ethical standards of research with human subjects. Simply put, CV researchers must treat respondents in developing countries with more respect, as citizens rather than experimental subjects. It is quite possible that a given CV survey can yield accurate and reliable survey results and still not be an ethically acceptable method for economic analysis. I begin this discussion with three examples from developing countries that highlight ethical dilemmas CV researchers have tended to ignore.

(i) When is the use of a referendum elicitation procedure unethical?

Although the merits of referendum-type question(s) are still being hotly debated, most CV practitioners still probably consider the use of one or two discrete choice questions the preferred elicitation method. The implementation of the discrete-choice approach requires that several split-samples of respondents receive different randomly-assigned prices for the good or service described in the CV scenario. Their responses are used to construct values for the study population. CV researchers have not seem troubled by the fact that giving different respondents different prices may spread confusion and misinformation about the real costs of addressing a problem of possibly great public concern.

For example, I used a referendum question in two recent CV studies conducted for the World Bank. In a CV survey conducted in November, 1994, designed to estimate households' demand for improved water services in a small town in Mozambique, I randomly assigned five different prices to subsamples of respondents. In June, 1995, our study team returned to the town where the survey was conducted to brief a group of local government officials (including the District Administrator) and community leaders on the results of the CV survey. After the formal briefing there was lengthy group discussion about the policy implications of the findings, during which one elderly man, a neighborhood leader, said that he had followed the implementation of the survey closely and talked to many respondents after their interviews. He reported that he generally agreed

with our findings. There was, however, one thing he did not understand: why were different households asked to pay different prices? Why should one household be charged more than another for a water connection? This did not seem fair or necessary to him.

Of course, it was never our intention to leave the impression that different households in the community would be charged different prices for a water connection, but that seems likely to have been one outcome of our CV survey. Our use of a referendum approach with different prices may well have increased public uncertainty and confusion about the costs of improved water services in this town.

In July, 1995, in another CV survey for the World Bank, I helped design and manage a survey of a few hundred households in three areas of Semarang, Indonesia, a city of 1.2 million people on the northern coast of Java. We worked in three districts (kelurahans) of the city. Each neighborhood unit has an officially designated leader who had to be informed about the survey by higher level community leaders before the survey could take place. After such permission was secured, we sent a team of enumerators and a field supervisor to the neighborhood to interview all of the sample households in a relatively short period of time (generally 2-3 hours). In this way, respondents would supposedly have little time to discuss the interview with other respondents before the latter were interviewed.

However, in one community the neighborhood leader dropped in on an early interview unannounced and heard the referendum price offered the respondent. This price happened to be the highest of the four prices we used, and the neighborhood leader was quite concerned. He quickly spread word throughout the neighborhood to answer "no" to our valuation question; he felt that the improved water and sanitation program offered in our CV scenario was simply too expensive at the highest of our referendum prices. Obviously our problem arose in part because the field supervisor and the enumerator were unable to exclude the neighborhood leader from a supposedly private interview (although in justice to them both, this is not a easy thing to do in Indonesia). But it also illustrates (1) how quickly information can spread in a close-knit urban community, (2) how seriously some community members may take the information presented to them in a CV scenario, and (3) how easily a community can be confused by using different prices and other split-sample experiments.

CV researchers may well argue that any such misinformation is the fault of the survey designer, who is supposed to craft language for scenarios that inform the respondent that the choice is "just" hypothetical. Respondents are thus told to "suppose" or "imagine" that the choice to be described is not actually or necessarily going to be offered. This is often a nuance that is lost in translation; in some cases the conditional subjunctive may actually not be translatable.

A good CV scenario is designed to be realistic and for respondents to take the "hypothetical" choice seriously. In practice, the more seriously a respondent considers the choice posed, the less hypothetical the scenario is likely to seem. This is particularly true for goods and services with large use vales that are commonly provided by government--such as infrastructure services. The less hypothetical the provision of the good or service described in the CV scenario, the more likely the different referendum prices will confound serious public discussion of the issue at hand.

CV researchers generally assume that they will sample large populations, and that there will be little chance that one respondent will talk with another. In such a case, perhaps it can be assumed that any misinformation communicated to a relatively small number of respondents about the price (or other aspects) of a hypothetical good or service will not be widely discussed or influence public debate. But in small towns, villages, or urban neighborhoods in developing countries, such an assumption is quite often unwarranted.

Even in large capital cities, a sample of 1000-2000 households is not so small that a CV survey can be discussed by many people--some perhaps quite knowledgeable about the problem addressed or influential in shaping public discourse about its solution. As a perhaps not very

typical example of widespread public discussion of a CV scenario, I was interviewed on National Bulgarian Radio about a CV survey I was conducting in September, 1995, on households' willingness to pay for air quality improvements in Sofia. At the beginning of the show, I made a brief statement about the objectives of the CV survey and the management plan used in the CV scenario. The radio host then asked the listening audience to respond to some selected questions from our survey instrument, and people called in to say how they would answer the questions and to give their impressions of air quality in Sofia. I have been told that the discussion in Bulgarian was quite lively, and that people really wanted to know exactly how they would pay for air quality improvements--and why they had to pay. Several callers felt it was the governments' responsibility to pay for such environmental quality improvements, not theirs. The "hypothetical" aspect of the air quality management plan described in the CV scenario seems to have been largely lost.

This issue of the spread of misinformation arises not only with the prices used in the referendum elicitation method, but with scenario construction and many other split sample experiments commonly used by CV researchers. For example, Richard Carson et al.'s CV survey in support of the State of Alaska's case against Exxon in the Exxon- Valdez oil spill is one of the finest, most professional CV surveys conducted to date. In this survey Carson et al. crafted a CV scenario that described an oil spill containment technology called a "Norwegian sea fence" that could be used in the high seas of Prince Williams Sound to contain future oil spills. Respondents in the survey were asked whether they would vote for or against a rapid response oil spill containment force in Prince Williams Sound that would deploy this Norwegian sea fence if the implementation of the plan would cost their household a specified amount of money. But, of course, there is no such thing as a "Norwegian sea fence." The CV researchers told respondents that such a hypothetical technology existed so that they would believe the oil spill containment response force would be effective, and respondents would thus not reject the scenario as implausible (which it was).

A CV researcher is more like a public opinion pollster than a market researcher. I believe that the act of engaging an individual in a conversation about issues of public concern obligees the researcher not only to accept certain ethical principles of research with human "subjects," but also to conform to additional ethical standards about the proper use of such information in a democratic society.

(ii) How honest should one be about the institutional regime contemplated for delivering the "hypothetical" goods or services?

In developing countries CV researchers often face a situation that many of their counterparts in industrialized countries would at first glance envy: the CV scenarios used in such surveys may not be hypothetical, but all too real. If the donors and governments that fund the CV surveys judge the results to be credible, the findings will likely be used in policy decisions. This movement from hypothetical to "real" CV scenarios raises a host of ethical concerns.

To illustrate, it is common knowledge among the international construction and consulting firms carrying out infrastructure projects and providing technical assistance with World Bank financing that in many countries a substantial portion of the proceeds of World Bank loans are paid in kickbacks to government officials. A standard mechanism for paying such bribes to government officials is for international consulting firms to hire local counterpart firms, and to pay these local firms for services that are either overpriced or not rendered at all. These local firms then pay the kickbacks to government officials.

Such siphoning off of foreign assistance by senior government officials does not often go unnoticed by a country's urban poor. They see government officials who earn modest salaries driving Mercedes and living in expensive homes. Suppose now that the World Bank is considering making loan to expand water and sanitation services in a country where such kickbacks are common, and that the CV researcher is asked to estimate households' willingness to pay for the benefits of such a project. The results of such a CV survey might be used as part

of a project feasibility study, pricing study, or cost-benefit analysis.

Imagine that the CV researcher accepts the assignment and crafts a scenario asking a sample respondent to suppose that she could vote on whether or not the national government should borrow money from the World Bank to finance a new water and sewerage system for the nation's capital. The respondent is told that if the majority of people voted for the government to take the loan, a new water and sewer distribution system would be constructed, and her household would be assessed a specified amount of money to have the system extended into her neighborhood. If her household chose to do so, it could then connect to this system at a given monthly tariff month--in addition to the assessment fee, and connection and replumbing costs. If the majority of people voted against the plan, the government would not borrow the money and the new water and sewer system would not be built.

Suppose then that during the pretest of the survey instrument, numerous respondents say that they do not want their government to borrow money from the World Bank because they know that much of the funds will not be used for the intended purposes, and in this regard they are in fact correct. If the survey instrument were implemented in this form, the results could substantially underestimate households' perceived benefits of the new water and sanitation system. Some might well argue that the instrument should be revised because the researcher's terms of reference were to measure the economic benefits of the new water and sanitation services, not the public's distrust of its government and concerns about whether World Bank funds would be properly used. So the researcher is instructed to eliminate any reference to the World Bank in the CV scenario, even though the World Bank does intend to use the results to appraisal a water and sanitation project in just the way that some of the respondents feared. Should the CV researcher serve his client in this manner and delete the references to World Bank financing in the scenario? Or does he bear some responsibility to be truthful to the respondents he is interviewing about the true purposes of the survey?

(iii) Should respondents be compensated? If so, how?

For at least the last decade anthropologists and sociologists working in the development field have harshly criticized economists' use of large-scale household surveys as "extractive," meaning that researchers extract data from respondents and give them little, if anything, in return. This point was made forcefully to me by the leader of a poor, informal squatter community on the outskirts of Guatemala city: "we want more than words from your survey." CV researchers need to give more careful thought to what they should return to the respondents and communities they work in.

One thing that survey researchers could give respondents is money, but this is rarely done. Survey researchers will tell you that paying respondents will bias the results and wreck havoc with the selection of respondents and implementation of the field work. This may well be true in many instances, but it is also somewhat self-serving. Paying respondents would obviously cut in researchers' limited budgets, but that in itself does not mean it would not be a good thing to do. I have actually never seen any evidence of the effect that paying respondents in developing countries had on survey administration. Market research firms in the United States routinely pay people to participate in focus group discussions.

Perhaps the most obvious thing CV researchers could do for respondents is to communicate their findings to the community where the research was conducted. There are many good reasons for doing this, not the least of which is that researchers are likely to gain new insights about their interpretations of some statistical analyses. But most importantly, the researcher owes the community a full account of what was learned.

2. Explaining what a contingent valuation study is all about

The first difficulty a CV researcher often faces in administering a CV survey in a developing country is to explain to interviewers what the study is about. The concepts of economic value and "maximum willingness to pay" (or minimum compensation that a respondent is willing to accept) are often difficult for the researcher to translate and for some noneconomists to grasp. Open-ended willingness-to-pay questions require that the CV researcher convey the notion of the maximum amount an individual is willing to pay; this can be particularly difficult to translate. For example, in a CV study we conducted in Haiti, in response to an early version of an open-ended CV question, a respondent asked one of our interviewers, "What do you mean the maximum I would be willing to pay? You mean when someone has a gun to my head?" In fact, the CV researcher is trying to determine the maximum amount the respondent would be willing to pay for the hypothetical good or service in the context of the existing institutional regime within which individuals are free to allocate their personal financial resources.

If a referendum elicitation procedure is used, respondents themselves will not need to be asked an open-ended question about the maximum they would be willing to pay for a hypothetical good or service, but the interviewers themselves will want to understand the reason for the split-sample experiment and the assignment of different prices to randomly selected respondents. One particularly common source of confusion relates to the distinction many people want to make between willingness and ability to pay. It is important for the CV researcher to clearly communicate to interviewers that the purpose of the valuation question is to determine what the respondent would do if she had to make a real economic commitment (i.e., faced an actual budget constraint). In other words, the objective of the CV study is to determine how much respondents are willing and able to pay.

The classification scheme presented in Table 1 can often be useful to clarify this point. As shown, the total population of respondents can be envisaged as four groups. First, there are respondents who are willing and able to pay (cell 1). These are the ones the CV researcher wants to classify as accepting the CV scenario: they are both willing to pay for the hypothetical good or service and have "sufficient" income to do so. Second, there are respondents who are able but not willing to pay (cell 2). These respondents could pay in the sense that they have "sufficient" income, but they choose not to do so, presumably because they have other things on which they prefer to spend their money.

A third group of respondents are willing but not able (cell 3). It is this group that typically causes noneconomists the most confusion. The argument is often made that individuals in this third group would like to purchase the hypothetical good or service iftheir income was higher. But in their current financial circumstances they are not able to pay. Noneconomists will often like to classify these people as willing to pay, but the CV researcher must emphasize that for the purposes of the study such individuals must be categorized as not willing to pay (i.e., not willing and able).

A fourth group of individuals are not willing and not able to pay (cell 4). Respondents in this group cannot afford to pay for the hypothetical good or service. But even if their incomes increased by some specified amount, they would still not want to pay. These people should clearly be classified as not willing to accept the CV scenario. The important point to recognize is that demand for the hypothetical good or service is not likely to be a function solely of income. It is possible that increases in income will have a relatively small effect on willingness to pay for a specified good or service.

3. Interpreting Responses to Contingent Valuation Questions

One of the reasons that economists and survey researchers have been skeptical about the ability to conduct CV surveys in developing countries is the presumed difficulty of understanding and interpreting respondents' answers to sensitive or hypothetical questions. Such worries are often well-founded, and careful questionnaire development is needed. We faced a problem interpreting responses to the valuation questions in the CV survey we conducted in Semarang,

Indonesia.

The CV scenario was designed to determine whether a household would vote in favor of having water and sewer lines installed in its neighborhood if everyone in the community had to pay a specified assessment fee (whether or not they connected), and then if water and sewer lines were installed, whether the household would choose to connect to them if a specified monthly tariff were charged. After the first couple of days of pretesting a CV questionnaire, we discovered that everyone was saying "yes" to everything, regardless of the assessment fee or monthly tariff offered to them.

We stopped the pretesting and held a meeting with our team of enumerators to find out why everyone was answering "yes" to our valuation questions. During the course of a two-hour discussion, it became clear that respondents were in fact answering "yes, but ...," and then giving many different qualifications to their answer. The interviewers informed us that in Indonesia these were all polite ways of saying "no." We then developed a coded list of all the many ways a respondent might say "yes, but .." to our valuation questions and mean "no."

Table 2 presents this list of different ways to say "no" and the number of times respondents gave each "yes, but" answer to the valuation question (regarding whether the respondent's household would want to connect to the new water and sewer lines if a specified monthly tariff would be charged). For example, of the 164 answers that we recorded as "no," 52 respondents (32%) answered "Yes, but I cannot afford it." Another 18% said, "I agree, but the costs are too high." These "yes, but" responses (50% of the total number of "no's") seem to be clearly negative and correctly classified as "no."

However, another 30% of the respondents said, "I need to know others' opinion about the program before I decide." Our enumerators assured us that this was simply a polite way of saying "no," but to us the respondents' answer seemed reasonable. The assignment of such responses to the "no" category seems more uncertain than the previous two types of answers. Other answers listed in Table 2 also seem somewhat ambiguous and uncertain. We thus believe that the proportion of respondents that we have placed in the "no" categories for this valuation question is probably too high. We followed our enumerators' guidance in coding the answers, but in fact we believe our analytical results are an underestimate of the number of households that would actually connect to the water and sewer lines.

This example illustrates how careful CV researchers must be in interpreting respondents' answers to valuation questions in a cross-cultural context.

4. Setting Referendum Prices

When researchers use a referendum-type elicitation procedure in administering CV surveys in developing countries, they have often make a simple, but costly mistake: the range of prices used is too narrow. They tend to set the highest referendum price too low and the lowest price too high. It is thus often difficult to estimate "good" valuation functions, and as a result the estimates of economic benefits are more uncertain than need be.

CV researchers tend to be reluctant to set the highest referendum price high enough to choke off almost everyone's demand (ideally the highest price should typically be rejected by 90-95% of the respondents). This is in part because in developing countries CV interviews are almost always conducted in-person, and it is embarrassing for interviewers to ask such a high price. As noted above, respondents often consider the CV scenario very seriously, and, if they receive the highest referendum price, can be acutely disappointed that the "hypothetical" good or service is so expensive. This problem is exacerbated in countries with highly skewed income distributions. Interviewers often complain that asking such a high price is silly because everyone knows that people cannot afford such a price, and the interview is difficult for them to conduct. In effect, asking such a high price makes the interviewers look insensitive and/or uninformed.

This problem is compounded if there is a tendency of respondents to say "yes" to whatever question the interviewer asks ("compliance bias"). In this case choking off demand by asking a very high price is even harder, and a very high price may be even more necessary.

For some of the same reasons, interviewers are also reluctant to ask a very low price. Such a question can also make interviewers seem uninformed. But there is another reason CV researchers often set the lowest price too high. If the agency funding the CV survey is interested in using the results for pricing decisions, they may simply not be interested in learning about the extent of demand for the good or service at very low prices because they have no intention of making the service available under such terms. For the funding agency, asking part of the sample a very low price may well seem like a waste of resources.

5. Constructing Joint Public-Private CV Scenarios

Many of the CV studies in developing countries have been concerned with estimating the demand for infrastructure services. In one important respect, the CV scenarios required for such surveys are considerably more complex than those used in CV surveys about environmental quality improvements in industrialized countries. In order to understand household demand for infrastructure services such as improved sewers, roads, or telecommunications, it is often necessary to jointly model two household decisions.

First, a household must decide whether to support a collective decision of a community regarding whether or not its members are willing to share some of the capital costs of a project. For example, consider an infrastructure investment in sewer lines. If it could be assumed that all households in a particular neighborhood would connect or could be forced to connect to new sewer lines if they were installed, a neighborhood, collective decision on their installation might not be necessary. However, if this cannot be assumed, as is typically the case, then the agency or authority responsible for the sewerage system needs assurance that, if the sewer pipe is laid in a neighborhood, households will pay a predetermined amount for this infrastructure improvement whether or not they connect. A fiscally responsible sewer authority cannot bear the financial risk of installing such expensive infrastructure without some form of payment guarantee. From the agency's financial perspective, each household in the neighborhood should be required to pay some share of the sewer network installation costs--whether or not the household obtains a connection--because the value of its property increases simply by having the option to connect in the future.

Second, a household must decide whether it will use such infrastructure if it were installed. Because many infrastructure projects have positive externalities and public good characteristics, it is plausible that a household would vote in favor of a project in the collective decision and agree to pay some share of the capital costs even if it decided not to use the service. Because these two decisions are conceptually interrelated, the CV scenario needs to present information to the respondent about the terms and conditions of both parts of the "deal" in order for the respondent to be able to make informed choice. In practice this means that a large amount of information may need to be conveyed to respondents. This will typically necessitate the use of photographs and drawings. Also, respondents are very likely to have numerous questions about the proposals. This will require the use of highly trained, well-informed interviewers that can easily depart from the questionnaire script.

Summary

There are some contingent valuation researchers (I count myself among them) that believe it is easier to administer high quality contingent valuation surveys in some developing countries than it is in industrialized countries. For example, response rates are typically very high in developing countries, and respondents are often quite receptive to listening and considering the questions posed. Also, interviewers are inexpensive relative to prices in industrialized

countries. This allows CV researchers to use larger sample sizes and conduct more elaborate split-sample experiments.

But this does not mean that conducting CV surveys in developing countries is easy; just that it is easier than conducting CV surveys in industrialized countries. As discussed in this paper, there are numerous issues that arise in CV work in developing countries that demand careful attention in order to increase the probability that high- quality results are to obtained.

Table 1. Willingness and Ability to Pay
Table 2. Description, Frequency of Different "No" Responses (Semarang, Indonesia)

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